AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for assaying sequence-specific hybridization, said method comprising:

providing a target comprising at least one target biopolymer sequence;

providing a probe comprising at least one probe biopolymer sequence;

adding said probe and said target to a binding medium to provide a test sample;

applying a first stimulus to said test sample to provide a first stimulated test sample;

detecting a first signal from said first stimulated test sample, wherein said first signal is correlated with a binding affinity between said probe and said target;

applying a second stimulus to said first stimulated test sample to provide a second stimulated test sample;

detecting a second signal from said second stimulated test sample, wherein said second signal is correlated with said binding affinity between said probe and said target; and

comparing said first signal and said second signal to accomplish said assaying;

wherein: (a) at least one label is provided in said test sample, (b) said first stimulus, said second stimulus, said first signal and said second signal are photonic or electronic, (c) at least one of said first stimulus and said second stimulus is photonic, (d) when said first stimulus and

said second stimulus are photonic, an intermediate electronic stimulus is applied to said test sample after said first stimulus and before said second stimulus, ~~and~~ (e) said probe biopolymer sequence and said target biopolymer sequence contain nucleobases and said probe hybridizes specifically with said target to form a homologous duplex, a homologous triplex, a homologous quadruplex, a Watson-Crick triplex or a Watson-Crick quadruplex, and (f) said method is conducted without separating probe-target complexes from free probes and targets.

2. (Original) The method of claim 1, wherein said first stimulus is photonic and said second stimulus is electronic.

3. (Original) The method of claim 1, wherein said first stimulus is photonic and said second stimulus is photonic.

4. (Original) The method of claim 1, wherein said first stimulus is electronic and said second stimulus is photonic.

5. (Canceled)

6. (Original) The method of claim 1, wherein application of said second stimulus is at least partially coextensive with application of said first stimulus.

7. (Original) The method of claim 1, wherein said first signal is photonic and said second signal is electronic.

8. (Original) The method of claim 1, wherein said first signal is photonic and said second signal is photonic.

9. (Original) The method of claim 1, wherein said first signal is electronic and said second signal is photonic.

10. (Canceled)

11. (Canceled)

12. (Previously Presented) The method of claim 1, wherein at least one of said first stimulus and said second stimulus is a laser beam.

13. (Previously Presented) The method of claim 1, wherein said first stimulus, said second stimulus or said intermediate electronic stimulus is electric voltage.

14. (Original) The method of claim 1, wherein said at least one label transfers energy to at least one other label to generate at least one of said first signal and said second signal.

15. (Original) The method of claim 1, wherein said at least one label is chemiluminescent or electrochemiluminescent.

16. (Original) The method of claim 1, wherein said at least one label is an electron spin label.

17. (Previously Presented) The method of claim 1, wherein said probe hybridizes specifically with said target to form a homologous duplex substantially free of Hoogsteen bonding.

18. (Previously Presented) The method of claim 1, wherein said probe hybridizes specifically with said target to form a homologous or Watson-Crick triplex substantially free of Hoogsteen bonding.

19. (Previously Presented) The method of claim 1, wherein said probe hybridizes specifically with said target to form a homologous or Watson-Crick quadruplex substantially free of Hoogsteen bonding and free of G-G quartets.

20. (Original) The method of claim 1, wherein said probe is a nucleic acid analog containing at least one of an uncharged backbone, a partially charged backbone, a cationic moiety, a crosslinking agent, a crosslinking sidechain and a nucleobase analog.

21. (Original) The method of claim 1, wherein at least one of said probe biopolymer sequence and said target biopolymer sequence contains an amino acid sequence.

22. (Original) The method of claim 1, further comprising:

applying at least one additional stimulus to said second stimulated test sample to provide an additionally stimulated test sample;

detecting at least one additional signal from said additionally stimulated test sample, wherein said at least one additional signal is correlated with said binding affinity between said probe and said target; and

comparing said first signal, said second signal and said at least one additional signal to accomplish said assaying.

23. (Original) The method of claim 22, wherein said first stimulus, said second stimulus and said at least one additional stimulus are different from each other.

24. (Previously Presented) The method of claim 22, wherein at least one of said first stimulus, said second stimulus and said at least one additional stimulus is applied non-continuously.

25. (Previously Presented) The method of claim 1, wherein at least one of said first stimulus and said second stimulus is applied non-continuously.

26. (Original) The method of claim 1, wherein at least one of said probe and said target is bonded to a substrate, surface, partition, membrane or electrode.

27. (Currently Amended) A method for assaying sequence-specific hybridization, said method comprising:

providing a target;

providing a probe, wherein at least one of said probe and said target comprises at least one biopolymer sequence;

adding said probe and said target to a binding medium to provide a test sample;

applying a first stimulus directly to said test sample to provide a first stimulated test sample;

detecting a first signal from said first stimulated test sample, wherein said first signal is correlated with a binding affinity between said probe and said target;

applying a second stimulus directly to said first stimulated test sample to provide a second stimulated test sample;

detecting a second signal from said second stimulated test sample, wherein said second signal is correlated with said binding affinity between said probe and said target; and

comparing said first signal and said second signal to accomplish said assaying;

wherein: (a) at least one label is an intercalating agent provided in said test sample and is not covalently bound to said probe or to said target, (b) said first stimulus, said second stimulus, said first signal and said second signal are photonic or electronic, (c) at least one of said first stimulus and said second stimulus is photonic, ~~and~~ (d) when said first stimulus and said second stimulus are photonic, an intermediate electronic stimulus is applied to said test sample after said first stimulus and before said second stimulus, and (e) said method is conducted without separating probe-target complexes from free probes and targets.

28. (Original) The method of claim 27, wherein at least one of said probe and said target is a protein, a peptide or a lipid membrane.

29. (Original) The method of claim 27, wherein one of said probe or said target is not a biopolymer.

30. (Previously Presented) The method of claim 1, wherein said at least one label is not covalently bound to said probe or said target.

31. (Previously Presented) The method of claim 1, wherein said at least one label is an intercalating agent.

32. (Previously Presented) The method of claim 31, wherein said at least one label is not covalently bound to said probe or said target.

33. (Previously Presented) The method of claim 32, wherein said first stimulus is directly applied to said test sample and said second stimulus is directly applied to said first stimulated test sample.

34. (New) The method of claim 1, wherein said first stimulus, said second stimulus or said intermediate electronic stimulus is electric voltage applied to said test sample for 15 seconds or less.

35. (New) The method of claim 1, wherein said first stimulus, said second stimulus or said intermediate electronic stimulus is electric voltage effective to destabilize imperfectly matched hybridization partners and ineffective to destabilize perfectly matched hybridization partners.

36. (New) The method of claim 27, wherein said first stimulus, said second stimulus or said intermediate electronic stimulus is electric voltage applied to said test sample for 15 seconds or less.

37. (New) The method of claim 27, wherein said first stimulus, said second stimulus or said intermediate electronic stimulus is electric voltage effective to destabilize imperfectly matched hybridization partners and ineffective to destabilize perfectly matched hybridization partners.